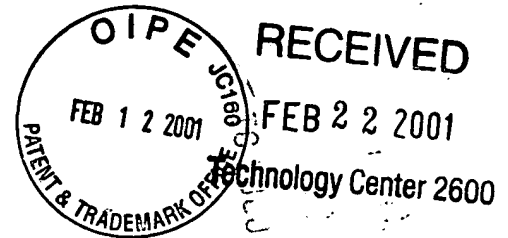


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial Number: 09/643,046
Filing Date: 08/21/2000
Applicant(s): Gutin
Title: Optical Pickup Apparatus and Method
Group Art Unit: 2872
Examiner:



Information Disclosure Statement

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Attached is a completed Form PTO-1449A and copies of the references cited thereon. Following are comments on these references pursuant to Rule 98:

U.S. Patent Documents

U.S. patent # 6,115,345 by Kato, et al., appears to comprise an optical pickup device with means to provide improved resolution by utilizing two separate signal beams superimposed on the storage media and separately detected. This patent appears to differ from applicant's invention at least in that it utilizes a fixed mechanical diffraction device to provide the diffracted signals. In contrast, applicant's invention utilizes an electronically reconfigurable diffraction grating to diffract the light, in a manner that provides increased readout speed and storage density by means of improved signal processing techniques that distinguish overlapping signals on the detector. These improved signal processing techniques using overlapping signals are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the fixed mechanical diffraction device.

U.S. patent # 6,088,310 by Yanagawa appears to comprise an optical pickup device for use in DVD applications. Applicant's invention appears to differ from this patent at least in that applicant's invention uses an electronically reconfigurable diffraction grating for order separation, whereas this patent is limited by the fixed order separation of a permanent blazed hologram used for order separation. Applicant's invention also enables increased storage density using signal processing techniques with the ability to differentiate overlapping signals of varying order. These improved signal processing techniques are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the permanent blazed hologram.

U.S. patent # 5,717,674 by Mori, et al., appears to comprise an optical pickup device which utilizes a short wavelength semiconductor laser as a means of increasing storage density since the diffraction efficiency of the source is increased as the wavelength is decreased. This patent appears to differ from applicant's invention at least in that it utilizes a fixed grating in combination with a holographic optical element to achieve diffraction. Applicant's invention utilizes an electronically reconfigurable diffraction grating to achieve diffraction, which allows the incorporation of signal processing methods to interpret overlapping signals on the detector thereby providing a means of increased storage density and increased read/write speed. These improved signal processing techniques are

only available by utilizing the reconfigurable diffraction grating and cannot be implemented with fixed grating / holographic combination.

U.S. patent # 5,701,283 by Alon, et al., appears to comprise electronic control circuitry means for reading multiple tracks from an optical storage medium at once and does not comprise any specific optical elements. This patent appears to differ from applicant's invention in that it provides increased readout speed by electronic control means only. In contrast, applicant's invention provides increased readout speed and increased storage density by optical and signal processing means, by utilizing a reconfigurable diffraction grating in the optical configuration of the pickup device.

U.S. patent # 5,652,746 by Heiman appears to comprise a means for improved tracking and simultaneous reading of adjacent tracks on an optical storage device. This patent appears to differ from applicant's invention at least in that it utilizes an image based detection system and subsequent image based processing to read from adjacent tracks simultaneously, and does not include any means of diffraction. In contrast, applicant's invention utilizes a single point system and optical diffraction provided by an electronically reconfigurable diffraction grating. Applicant's invention utilizes a reconfigurable diffraction grating to provide useful diffracted light in multiple orders and signal processing techniques to differentiate the output of overlapping detecting orders thereby increasing the storage density and readout speed.

U.S. patent # 5,627,805 by Finkelstein, et al., appears to comprise a means for improved tracking and simultaneous reading of multiple tracks in parallel on an optical storage device. This patent appears to differ from applicant's invention at least in that it utilizes an image based detection system and subsequent image based processing to read from adjacent tracks simultaneously, and does not include any means of diffraction. In contrast, applicant's invention utilizes a single point system and optical diffraction provided by an electronically reconfigurable diffraction grating. Applicant's invention utilizes a reconfigurable diffraction grating to provide useful diffracted light in multiple orders and signal processing techniques to differentiate the output of overlapping detecting orders thereby increasing the storage density and readout speed.

U.S. patent # 5,412,631 by Komma, et al., appears to comprise an optical pickup device that utilizes a permanent blazed hologram as a means of diffracting the light. This patent appears to differ from applicant's invention at least in that applicant's invention utilizes a reconfigurable diffraction grating to diffract the light which provides increased readout speed and storage density by means of improved signal processing techniques that distinguish overlapping signals on the detector. These improved signal processing techniques are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the permanent blazed hologram.

U.S. patent # 5,231,620 by Ohuchida appears to comprise an optical pickup device that utilizes a three beam diffraction grating blazed on a beamsplitter as a means of diffraction. This patent appears to differ from applicant's invention at least in that applicant's invention utilizes a reconfigurable diffraction grating to diffract the light which provides increased readout speed and storage density by means of improved signal processing techniques that distinguish overlapping signals on the detector. These improved signal processing techniques are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the fixed beamsplitter and diffraction grating combination.

U.S. patent # 5,128,914 by Kurata, et al., appears to comprise an optical pickup device which minimizes the tracking error signal even when the optical axis is displaced. This patent appears to

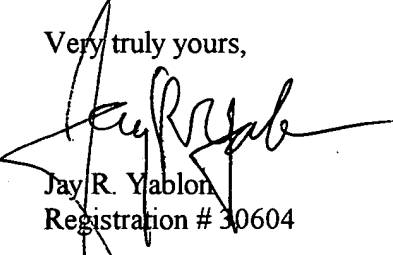
differ from applicant's invention at least in that it utilizes a fixed mechanical diffraction device. In contrast, applicant's invention utilizes an electronically reconfigurable diffraction grating to diffract the light, which provides increased readout speed and storage density by means of improved signal processing techniques that distinguish overlapping signals on the detector. These improved signal processing techniques are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the fixed mechanical diffraction device.

U.S. patent # 5,049,732 by Nagahama, et al., appears to comprise an optical pickup device with a complex optical scheme aimed at simplifying focus offset correction and eliminating spurious optical signals. This patent appears to differ from applicant's invention at least in that it utilizes a fixed mechanical diffraction device to provide the diffracted signal. In contrast, applicant's invention utilizes an electronically reconfigurable diffraction grating to diffract the light, which provides increased readout speed and storage density by means of improved signal processing techniques that distinguish overlapping signals on the detector. These improved signal processing techniques are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the fixed mechanical diffraction device.

U.S. patent # 4,945,529 by Ono, et al., appears to comprise an optical pickup device. This patent appears to differ from applicant's invention at least in that it utilizes a fixed mechanical diffraction grating to provide the diffracted signal. In contrast, applicant's invention utilizes an electronically reconfigurable diffraction grating to diffract the light, which provides increased readout speed and storage density by means of improved signal processing techniques that distinguish overlapping signals on the detector. These improved signal processing techniques are only available by utilizing the reconfigurable diffraction grating and cannot be implemented with the fixed mechanical diffraction grating.

None references cited herein anticipates or renders obvious, the disclosures and claims of applicant's application.

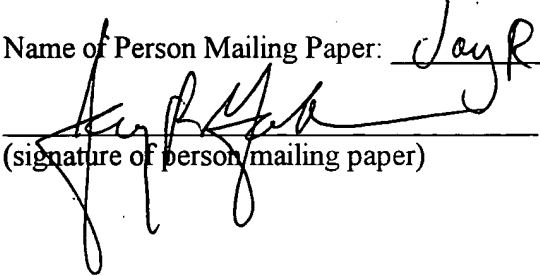
Very truly yours,


Jay R. Yablon
Registration # 30604

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